3) Hierarchical business structure is creating your own company in a foreign market as a branch or independent enterprise:

– Creating a business from scratch is expanding the company by building a new production facility. Advantages – minimal risks while maintaining maximum control. Disadvantages are high financial and time costs.

– Acquisition of control over a foreign company through the purchase of a controlling stake or merge. There is less competition, obtaining a certain market share. The disadvantage is the dependence on the professionalism of specialists and the need for comprehensive knowledge in the field of legal restrictions.

A possible criterion for classifying strategies is the type and level of management risk: the risk of losing control over knowledge and core functions (production, marketing, etc.), as well as the conflict of interests and strategies between the parent and multinational companies [3].

Conclusion. In spite of the chosen strategy, the company's entry into the international market preceded by detailed research, the development of effective marketing concepts and the search for reliable partners. These steps can play a crucial role in the success of your business in the new environment.

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INNOVATIVE CARBON-CARBON COMPOSITE MATERIALS

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Резюме – В статье рассматривается инновационные углерод-углеродные композиционные материалы. Из них изготавливают нанотрубки, графены и фуллерены, которые имеют колоссальное влияние на науку и технику.

Resume – The article introduces innovative carbon-carbon composite materials. Nanotubes, graphenes and fullerenes are made from them, which have a tremendous impact on science and technology.

Introduction. Even in ancient times, charcoal (carbon) was used for melting metals. Around the same time, people were aware of two allotropic modifications of carbon, namely diamond and graphite. Carbon, like no other currently known element, has a unique spectrum of sometimes conflicting properties: die-

lectric and metal, semiconductor and semimetal, heat insulator and the best heat conductor, super soft and super hard, transparency standard and a completely black body. And also heavy-duty, architecturally diverse, etc. The fact that mankind processes and consumes more and more carbon materials every year are explained by such unique structure and properties.

Today, carbon materials are an essential component of space rocket and aviation materials science, as well as a new generation of energy sources. At the moment, carbon materials are again in the spotlight, and all thanks to the discovery of such nanoparticles as fullerenes, graphenes and nanotubes.

Main part. In modern conditions, for engines of rockets, tips and wing edges in a slightly oxidizing atmosphere, materials with a strength of up to 200 MPa, an operating temperature of up to 4000 °C and a density of not more than 2 g/cm^3 are required, which does not allow the use of heat-resistant alloys that are not able to meet modern requirements in a number of industries. The development of such a technique requires the use of composite materials based on carbon fibers, carbon and carbide-carbon matrices.

Now, to visit space, it is necessary to make a rather risky trip on a rocket, which, moreover, requires significant costs. Scientists have proposed an innovative idea to solve this problem – the "space elevator" (Picture 1), which until recently seemed fantastic. This structure is conventionally a tape, the lower end of which is attached to the surface of the planet, and the upper one is in a geosynchronized orbit in space at a distance of one hundred thousand kilometers.

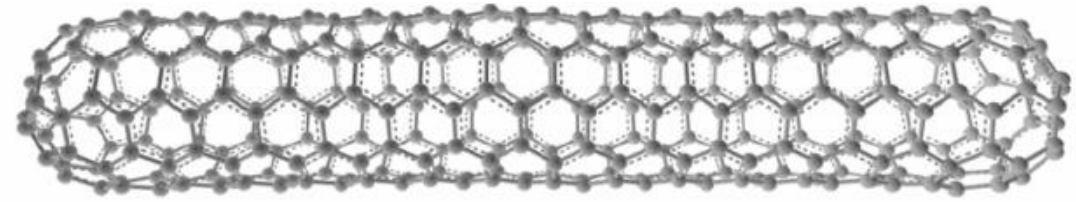
Pictures 1 – Space elevator

Source: [1]

This tape is always taut. This is because the attraction created by gravity at one end is balanced by the force caused by the centripetal acceleration of the

other. Consequently, an extremely high tensile strength combined with a low density is required from the cable.

But which of the modern materials is able to satisfy all these requirements? After theoretical calculations, carbon nanotubes were recognized as suitable material. These are extended cylindrical structures with a diameter of one to several tens of nanometers and a length of several centimeters, consisting of one or more hexagonal graphite planes rolled into a tube, usually ending in a hemispherical head (Picture 2).



Pictures 2 – The structure of a carbon nanotube

Source: [1]

If we assume that they are indeed suitable for the manufacture of a cable, then the creation of a «space elevator» represents a solvable engineering task, although it requires huge material investments and the use of advanced developments.

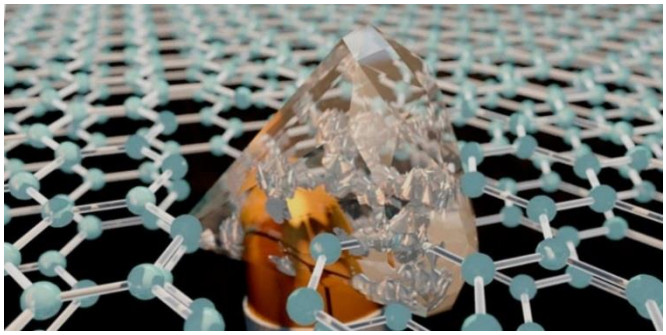
Another material of the new generation is penografite or, so-called, thermally expanded graphite. Its main characteristics are pores 2–5 nanometers in size (there are quite a large number of them), and the small thickness of the graphene layer packs (20–70 nanometers). This material has a number of unique properties: low bulk density, the ability to extrude without a binder, chemical inertness, anisotropy of electrical and thermal properties, the ability to absorb neutrons, and others. New CMs have been developed and created from this material: graphite foil, reinforced graphite sheet, braided stuffing box harness, etc. They retained all the properties inherent in graphite, and added new consumer qualities that are not inherent in graphite and other carbon materials – elasticity and ductility. New directions in the use of penografite and carbon KM are associated with the production of pipelines of aggressive environments, complex high-temperature heaters (including flexible ones), high-temperature heat shields and shields, etc.

The creation of carbon materials manufacturing processes, which are characterized by chemical inertness, low density, good electrical properties, the ability to control thermal conductivity and electrical resistance over a wide range, is one of the most important achievements in materials science and technology of non-metallic materials in recent times.

The use of modern carbon-carbon composite materials has made it possible to significantly reduce the mass of missiles, automotive vehicles, aircraft and sea vessels, increase their range, increase engine power, and produce new designs. In general, are used if the product needs to be operated at temperatures above

1200 ºC. An assessment of the properties of carbon fibers and plastics created on their basis indicates that, together with the aviation industry, the most promising areas for the use of carbon plastics are chemical, oil, automotive, textile, and agricultural engineering.

A new era in materials science is associated by the world scientific community with the discovery and production of graphene. Graphene is an allotropic modification of carbon in which atoms form a two-dimensional hexagonal crystal lattice with a thickness of just one atom. In simple words, this is one layer of material taken from a three-dimensional crystal, that is, a layer in which there is no third dimension. It has amazing properties, which also include excellent electrical and thermal conductivity, optical purity and mechanical strength, and surpasses any other material (Picture 3).



Picture 3 – Graphene

Source: [1]

In 1986, Hans-Peter Böhm proposed to call this material graphene, and as a result became his «godfather». By the end of the nineties of the last century, scientist Yoshiko Ohashi began studying the electrical properties of thin films created from graphite, with a thickness of only a few tens of atomic layers. In its chemical composition, graphene is completely indistinguishable from graphite or diamond. The only difference is the special spatial arrangement, due to which a rather large difference in physical properties is observed.

The first time graphene was received by two British scientists from Russia – Andrei Geim and Konstantin Novoselov, for which they were awarded the Nobel Prize in physics. To do this, they needed only a piece of graphite, the most ordinary adhesive tape and, of course, the famous Russian savvy. Two friends put a little graphite on the sticky side of the adhesive tape, after which it was glued and glued many times, as a result of which, after each time, the substance was divided in two. When the spot became completely transparent, the resulting graphene was transferred onto a substrate. A little later, this method was nicknamed the «method of exfoliation».

Conclusion. The list of possible uses of graphene is really very long. In the electronics industry, it ranges from foldable computer displays and light emitting diodes to ultrafast transistors. It implies more effective photodetectors and lasers, and it can also transform electrical storages and products from batteries to solar

panels. KMs, which include graphene, can increase the strength of aircraft wings, and in biomedicine, improve tissue engineering and drug delivery. Representatives of the entire industrial world are investing in order to take part in the graphene revolution. Lux Research reports show that the graphene market in dollars grew from 9 (2018) to 126 million (2020).

In our country, much attention is also paid to developments in the field of production and production of new materials. Belarusian scientists are actively cooperating with Russian and Chinese colleagues, hoping to achieve significant success in this direction.

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IMPACT OF THE PANDEMIC ON BUSINESS

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Резюме – Бизнес зависит от множества факторов. Таких как актуальность продукта или услуги, уровень развития общества, уровень конкуренции, даже сезон года играет немалую роль, и, конечно, обычное везение. В повседневной жизни мало кто на это обращает внимание. Казалось бы, это проблема самих предпринимателей. Но сейчас мы переживаем непростой период жизни, связанный с пандемией коронавируса.

Resume – Business depends on many factors. Such as the relevance of the product or service, the level of development of society, the level of competition, even the season of the year plays a significant role, and of course the usual luck. In everyday life, few people pay attention to this. It would seem that this is a problem for entrepreneurs themselves. But now we are going through a difficult period of life associated with the coronavirus pandemic.